

# PATENT COOPERATION TREATY

## PCT

### INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY (Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

REC'D 14 OCT 2004

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Applicant's or agent's file reference <b>CF017517WO</b>	FOR FURTHER ACTION		See Form PCT/IPEA/416
International application No. <b>PCT/JP 03 / 10260</b>	International filing date (day/month/year) <b>12.08.2003</b>	Priority date (day/month/year) <b>30.08.2002</b>	
International Patent Classification (IPC) or national classification and IPC Int.Cl. <b>C07C211/61, C09K11/06, H05B33/14</b>			
Applicant <b>CANON KABUSHIKI KAISHA</b>			

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 4 sheets, including this cover sheet.
3. This report is also accompanied by ANNEXES, comprising:
  - a. ☐ a total of \_\_\_\_\_ sheets, as follows:
    - ☐ sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).
    - ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.
  - b. ☐ a total of (indicate type and number of electronic carrier(s)) \_\_\_\_\_, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

4. This report contains indications relating to the following items:

- |                                     |              |   |
|-------------------------------------|--------------|---|
| <input checked="" type="checkbox"/> | Box No. I    | Basis of the report   |
| <input type="checkbox"/>            | Box No. II   | Priority  |
| <input type="checkbox"/>            | Box No. III  | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability  |
| <input type="checkbox"/>            | Box No. IV   | Lack of unity of invention  |
| <input checked="" type="checkbox"/> | Box No. V    | Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement |
| <input type="checkbox"/>            | Box No. VI   | Certain documents cited   |
| <input type="checkbox"/>            | Box No. VII  | Certain defects in the international application  |
| <input type="checkbox"/>            | Box No. VIII | Certain observations on the international application   |

Date of submission of the demand  <b>26.03.2004</b>	Date of completion of this report  <b>14.09.2004</b>	
Name and mailing address of the IPEA/JP  <b>Japan Patent Office</b>  3-4-3, Kasumigaseki, Chiyoda-ku, Tokyo 100-8915, Japan	Authorized officer  <b>Yuko KIRA</b>	<b>4H 3036</b>
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## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/JP 03 / 10260

## Box No. I Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

- ☐ This report is based on translations from the original language into the following language \_\_\_\_\_, which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
  - ☐ publication of the international application (under Rule 12.4)
  - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)

2. With regard to the elements of the international application, this report is based on (*replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report*):

- ☒ the international application as originally filed/furnished
- ☐ the description:
- pages \_\_\_\_\_ as originally filed/furnished
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☐ the claims:
- pages \_\_\_\_\_ as originally filed/furnished
- pages\* \_\_\_\_\_ as amended (together with any statement) under Article 19
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☐ the drawings:
- pages \_\_\_\_\_ as originally filed/furnished
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☐ the drawings, sheets/figs \_\_\_\_\_
- ☐ the sequence listing (specify): \_\_\_\_\_
- ☐ any table(s) related to sequence listing (specify): \_\_\_\_\_

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☐ the drawings, sheets/figs \_\_\_\_\_
- ☐ the sequence listing (specify): \_\_\_\_\_
- ☐ any table(s) related to sequence listing (specify): \_\_\_\_\_

\* If item 4 applies, some or all of those sheets may be marked "superseded."

**Box No. V** Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

## 1. Statement

Novelty (N)	Claims	<u>5 - 14</u>	YES
	Claims	<u>1 - 4, 15, 16</u>	NO
Inventive step (IS)	Claims		YES
	Claims	<u>1 - 16</u>	NO
Industrial applicability (IA)	Claims	<u>1 - 16</u>	YES
	Claims		NO

## 2. Citations and explanations (Rule 70.7)

D1:EP 1221434 A1(Mitsui Chemicals, Inc.)2002.07.10, [0001],  
D2:JP 2001-66809 A(CANON KABUSHIKI KAISHA)2001.03.16, Claims,  
D3:JP 7-43920 A(CANON KABUSHIKI KAISHA)1995.02.14, Claims,  
D4:Kelley,C.J. et al.  
'Synthesis of Bridged Oligophenylenes from Fluorene. Part 1. Ter- and Quarter-phenyls'  
Journal of Chemical Research, Synopses, 1997, Vol.12, p.446-447  
D5:US 5989737 A(Xerox Corporation)1999.11.23,,  
D6:JP 2001-192651 A(FUJI PHOTO FILM CO., LTD) 2001.07.17,  
D7:WO 97/33323 A1(UNIAX CORPORATION) 1997.09.12,Claims  
D8:WO 99/40655 A1(AVENTIS RESEARCH & TECHNOLOGIES GMBH & CO. KG)  
1999.08.12, Claims  
D9:JP 2002-8866 A(Toray Industries, Inc.) 2002.01.11, Claims, p.7  
D10:US 2003/65190 A1(SPREITZER,H.)2003.04.03, Claims

(1)Novelty: Claims 1,2,  
Inventive step: Claims 1,2

The subject matter of claims 1,2 does not appear to be novel with respect to D1-4.  
The subject matter of claims 1,2 dose not appear to involve an inventive step with respect to D1-4.

D1-9 disclose monoaminofluorene compounds which are regarded to fall within the definition the general formula [1] in the present Claim 1 and the general folmula [2] in present Claim 2.(D1: Compound No. B-12,B-23,B-25,E-29,E-30,F-22,G-11,I-31, D2: Compound No. 147,150,154, D3: Compound No. T-(1),T-(4),T-(11),T-(18),T-(28),T-(33),T-(39),T-(46),T-(48),T-(49),T-(50), D4: page447 right line 1-3)

## Supplemental Box

In case the space in any of the preceding boxes is not sufficient.  
Continuation of: V. 2

**(2) Novelty: Claims 3,4,15,16**  
**Inventive step: Claims 3,4,15,16**

The subject matter of claims 2,8 does not appear to be novel with respect to D1,4.  
The subject matter of claims 1,2,8 dose not appear to involve an inventive step with respect to D1,4.

D1,4 disclose monoaminofluorene compounds which are regarded to fall within the definition the general formula [1] 1and the general folmula [2] in present Claim 2. D1,4 also indicate that the above-mentioned monoaminofluorene compounds are organic electroluminescent materials.

**(3) Inventive Step: Claims 3,4,15,16**

The subject matter of claims 3,4,15,16 dose not appear to involve an inventive step with respect to D2,3.

D2,3 disclose monoaminofluorene compounds which is regarded to fall within the definition the general formula [1], and D3-7 also indicate that the above-mentioned monoaminofluorene compounds are charge-transporting materials

Using a charge-transporting material as an organic electroluminescent material is a common knowledge. Therefore, a person skilled in the art would easily realize the monoamino compounds disclosed in D3-7 are organic electroluminescent materials.

**(4) Inventive Step: Claims 5-16**

The subject matter of claims 5-16 dose not appear to involve an inventive step with respect to D1-10.

D1,4 disclose tertiary aromatic amines as organic electroluminescent materials. (see (2))

D2,3 disclose tertiary aromatic amines and the use of the amines as charge-transporting materials. As a charge-transporting material can be used as an organic electroluminescent material, a skilled person in the art would apply the above-mentioned amines for organic electroluminescent materials. (see (3))

D5-10 disclose that polycyclic aromatic hydrocarbon compounds (D5: Column 11 No.(22), D6: Claims, D7: Claims, D8: Claims, D9: Claims, page 7, D10: Claims) are electroluminescent materials. In particular, D5 discloses that tertiary aromatic amines are known to facilitate hole injection and hole transport, and polycyclic aromatic hydrocarbon compounds incorporate into a tertiary aromatic amine hole transporting layer.

Therefore, a skilled person in the art would easily conceive the idea of incorporating polycyclic aromatic hydrocarbon compounds disclosed in D5-10 with tertiary aromatic amines disclosed in D1-4.